



UNITED STATES PATENT AND TRADEMARK OFFICE

[Handwritten signature]

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,399	09/16/2004	Brent A. Anderson	BUR920040113US1	5398
30449	7590	08/23/2006	EXAMINER	
SCHMEISER, OLSEN & WATTS 22 CENTURY HILL DRIVE SUITE 302 LATHAM, NY 12110			LUU, CHUONG A	
			ART UNIT	PAPER NUMBER
			2818	

DATE MAILED: 08/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/711,399	ANDERSON ET AL.	
	Examiner	Art Unit	
	Chuong A. Luu	2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 15-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of method Group I, claims 1-14 which filed on August 8, 2006 is acknowledged. The traversal is on the ground(s) that the subject matter of all claims of 1-20 is sufficiently related that a thorough search for the subject matter of any one group of claims would encompass a search for the subject matter of the remaining claims and the search and the examination of the entire application could not be made without serious burden on the Examiner. This is not found persuasive, because Group I, claims 1-14 drawn to a method for manufacturing a semiconductor device, classified in class 438, subclass 197 and Group II, claims 15-20 drawn to a semiconductor device, classified in class 257, subclass 499

are drawn to distinct inventions as noted in the previous office action. Applicant's objection to the restriction requirement is noted but the fact that the two groups fall in two different classes would require two different searches and is therefore an undue burden.

The requirement is still deemed proper and is therefore made FINAL.

Claims Objections

Claims 13-14 are objected to because of the following informalities: Step (d) is followed by step (e) not step (f). Appropriate correction is required.

PRIOR ART REJECTIONS

Statutory Basis

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The Rejections

Claims 1-3, 5, 8, 10 and 12-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Daneman et al. (U.S. 6,764,936 B2).

Daneman discloses a device with

(1) (a) providing a substrate (204);

(b) forming a first single-crystal layer (202) on a top surface of said substrate (204);

(c) forming a second single-crystal layer (206) on a top surface of said first single-crystal layer (202);

(d) forming one or more devices (220) in said second single-crystal layer (206);

(e) forming a trench (208) in said second-single crystal layer (206) to form a single-crystal island containing said one or more devices, said first single-crystal layer (202) exposed in a bottom of said trench (208);

(f) removing said first single-crystal layer (202) in order to separate said single-crystal island from said substrate (204) (see Figures 2A-2E);

(2) wherein step (f) includes selectively removing said first single-crystal layer with respect to said second-single crystal layer (see Figures 2A-2E);

(3) wherein said substrate comprises silicon (see column 3, lines 55-67);

(5) wherein said second single-crystal layer comprises silicon (see column 3, lines 55-67);

(8) further including: between steps (e) and (f), forming a spacer on a sidewall of said single crystal island (see Figures 2A-2E);

(10) wherein step (d) further includes interconnecting said one or more devices to form an integrated circuit in said second-single crystal layer (see Figures 2A-2E);

(12) wherein said trench comprises one or more intersecting trenches (see Figures 2A-2E);

(13) (a) providing a single-crystal substrate (200);

(b) forming a buried single-crystal layer (202) in said substrate (200);

(c) forming one or more devices in said a layer (206) of said single-crystal substrate (200) above said buried single-crystal layer (202);

(d) forming a trench (208) in said layer of said single-crystal substrate (200) above said buried single-crystal layer (202) to form a single-crystal island containing said one or more devices, said buried single-crystal layer (202) exposed in a bottom of said trench (208);

(f) removing said buried single-crystal layer (202) in order to separate said

single-crystal island from said substrate (200) (see Figures 2A-2E).

PRIOR ART REJECTIONS

Statutory Basis

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The Rejections

Claims 4, 6-7, 9, 11 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daneman et al. (U.S. 6,764,936 B2) in view of Ferrari et al. (U.S. 6,331,444).

Daneman teaches the above outlined features except for wherein said first single-crystal layer comprises Si_xGe_y , Si_xC_y or Si_xAs_y ; further including: (g) after step (f) repeating steps (a) through (f) one or more times; further including: (g) after step (f) mechanical-chemical-polishing said substrate to expose a new top surface of said substrate; and (h) after step (g) repeating steps (a) through (g) one or more times; wherein said one or more devices are independently selected from the group consisting of NFETS, PFETS, bipolar transistors, resistors and capacitors; wherein said integrated circuit is a radio frequency identification circuit; wherein step (b) includes performing an

Art Unit: 2818

ion implantation of Ge or As followed by performing a heat treatment. However, Ferrari discloses an integrated device with **(4)** wherein said first single-crystal layer comprises Si_xGe_y , Si_xC_y or Si_xAs_y ; **(6)** further including: (g) after step (f) repeating steps (a) through (f) one or more times; **(7)** further including: (g) after step (f) mechanical-chemical-polishing said substrate to expose a new top surface of said substrate; and (h) after step (g) repeating steps (a) through (g) one or more times; **(9)** wherein said one or more devices are independently selected from the group consisting of NFETS, PFETS, bipolar transistors, resistors and capacitors (see column 4, lines 24-58); **(11)** wherein said integrated circuit is a radio frequency identification circuit; **(14)** wherein step (b) includes performing an ion implantation of Ge or As followed by performing a heat treatment (see column 4, lines 24-58). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teaching of Daneman (accordance with the teaching of Ferrari) since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin,. Doing so would facilitate the manufacture of the semiconductor device and increase the speed of the semiconductor structure.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chuong A. Luu whose telephone number is (571) 272-1902. The examiner can normally be reached on M-F (6:15-2:45).

Art Unit: 2818

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on (571) 272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Chuong Anh Luu
Patent Examiner
August 21, 2006